Whirlpool Of India Ltd.

Service Manual

Top Mount
No Frost Refrigerator

INDEX

Sno.	Detail	Page No.
1.0	Model Range	3
2.0	Safety Precuations	4
3.0	Feature /Technical specification	6
4.0	Controls & Electronic configuration	7
5.0	Wiring Diagram	9
6.0	Assembly/Dissembly	11
7.0	Controlling the refrigerator temperature	14
8.0	Error indications & Trigger	15
9.0	Exploded Views	17
10.0	Part List	23

NO FROST REFRIGERATOR: MODEL RANGE

410L Dlx - WRID41TW

410L Dlx – WRID41TS

445L Dlx – WRID45TW

445L Dlx – WRID45TS

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Safety precautions and warnings

Read all instructions before using this appliance in order to avoid risk of accident or possible damage.

Warning / Caution

Warning	This symbol is intended to alert the user to the possible death or injury.
Caution	This symbol is intended to alert the user to the possible injury or damage.

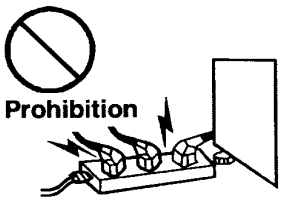
Description of symbols

- Indicates prohibition
- Do not disassemble
- Do not contact
- Adhere the instruction strictly
- Unplug from the electrical outlet
- Earth the appliance to avoid the risk of an electric shock.

Warning

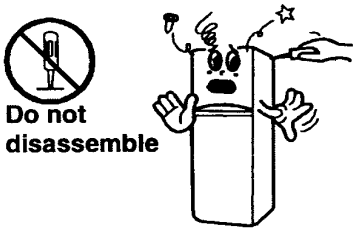
Do not plug multiple electric appliances into the same outlet.

This may cause abnormal heating or fire hazard.



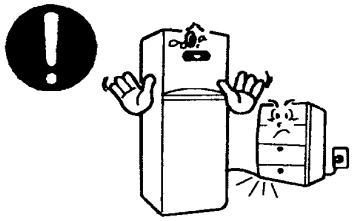
Do not disassemble repair or alter.

It may cause fire or abnormal operation which leads to injury.



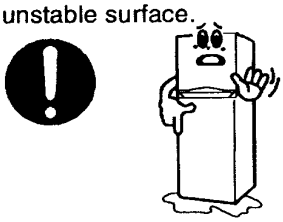
Do not bend the power cord with excessive force or do not have the power cord pressure by heavy article.

This may cause fire.



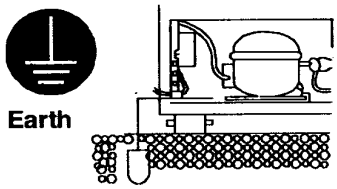
Check the operating environment

Do not install the refrigerator in a humid (with condensation) location or an unstable surface.



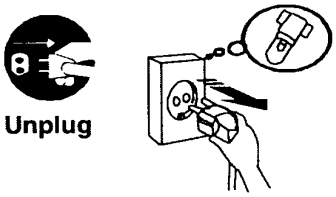
Be sure to earth.

If earthling is not done, it will cause break down and electric shock.



Pull the power plug out for exchanging the interior lam of the refrigerator.

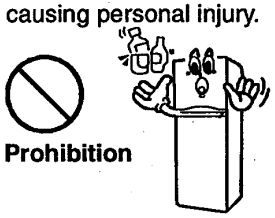
It may cause electric shock



⚠ Caution

Do not store bottled food or drinks in the freezing compartment.

Bottles may explode causing personal injury.



Prohibition

Do not store food in unstable manner.

Opening the door may trigger loose items to slip & cause injury.

Prohibition

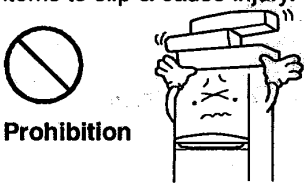
Do not store anything other than food in the refrigerator.

Medical supplies, which need to be under strict temperature control, should not be stored in the refrigerator.

Prohibition

Do not put on top of the refrigerator.

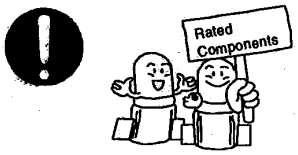
Opening or closing the door may trigger the loose items to slip & cause injury.



Prohibition

When replacing electric components, be sure to use rated components.

Check the model, rated voltage, rated current, operating temperature etc. of the component.

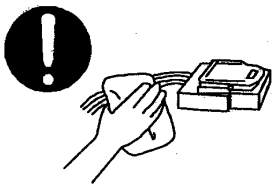


When servicing the refrigerator completely remove dust or foreign substances from the housing, electric connections etc.

This can protect against the risk of fire hazard caused by tracking and short circuit.

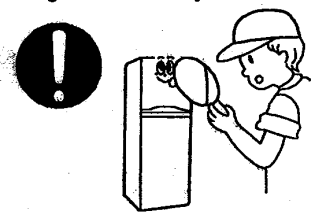
Please wipe out foreign materials of the metal option of power plug cleanly.

Use of it as it is may cause fire.



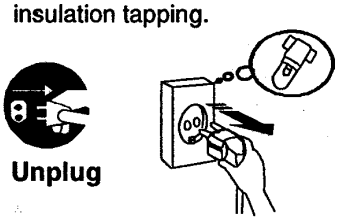
After servicing the refrigerator be sure to check the components are reassembled in a correct manner.

The service unit should be resembled & return to its original assembly state.



Check electrical ports for the trace of moisture penetration.

When the trace of moisture penetration is detected, insulation tapping.



Unplug

TECHNICAL /FEATURE SPECIFICATION

MODEL	410 L DIx	445 L DIx
Type	Frost Free	Frost Free
Capacities (L) total net	410L	445 L
Product Dimensions (mm)		
Width	700	700
Height	1652	1762
Depth	695	695
Gross Weight (kg)	85	90
Voltage / Hz	220-240V/50-60Hz	220-240V/50-60Hz
Compressor	EGZS 80 HLC	EGZS 80 HLC
Oil Capacity	ISO 22 (280 ml)	ISO 22 (280 ml)
Comp. Run Capacitor	XS351505XLUB 5 microF/350VAC	XS351505XLUB 5 microF/350VAC
PTC Relay	PTH7M220MD3 Resistance : 17.6 TO 26.4 @ 25°C	PTH7M220MD3 Resistance : 17.6 TO 26.4 @ 25°C
Motor Protector	4TM283KFBYY-53 opening temp – 105°C Closing temp. – 61°C Trip current – 9.4 A@25°C	4TM283KFBYY-53 opening temp – 105°C Closing temp. – 61°C Trip current – 9.4 A@25°C
Fan motor	MI – AE2 2680 rpm , 230V , 50 Hz , 10.5W	MI – AE2 2680 rpm , 230V , 50 Hz , 10.5W
Split Diffuser	NO	NO
Deodorizer	Yes	Yes
Number of Shelves	2	2
Type of Shelves	Glass	Glass
Humidity Control	Yes	Yes
RC Illumination (8 LED Bank)	Illumination by LED's	Illumination by LED's
FC Illumination (2 LED Bank)	Illumination by LED's	Illumination by LED's
Bottle Separator	YES	YES
Packet Separator	YES	YES
Can Rack	NO	NO
Egg tray	1 No.	1 No.
Ice Twister Assembly	YES –Plastic	YES –Plastic
Ice Collector	YES	YES
Collapsible Shelf	YES	YES
Freezer Door Bins	2	2
Refrigerator Door Bins	4	4
Quick Chill Compartment	YES	YES
Door lock	NO	NO
Handle	RECESSED	RECESSED
Roof Rail	NO	NO
Cabinet Stopper	YES	YES
POT Control in RC compartment	YES,8 SETTINGS	YES,8 SETTINGS
Fast Forward Cool Operation	NO	NO
Door Alarm	YES	YES
Auto Power save mode	NO	NO

CONTROLS & ELECTRONICS CONFIGURATION

Product Configuration	No frost Dlx
Product Control	RC Controlled
Software	BEE/Pot based Professional
User interface	No
Auto cool mode	No
Ice accelerator	No
Auto Power save mode	No
Door Alarm	Yes
Power supply for illumination	DC (Linear 220mA)
RC Illumination (8 LED)	Yes
FC Illumination (2 LED)	Yes
Control Board	Yes(Nilgiri BEE)
Defrost heater	Yes (Integrated Al tube 275W)
Fan motor	10.5W MI Shaded Pole AC fan motor
FC Door grounding	No
Compressor	EGZS 80 HLC
Run Capacitor	No
Door Reversibility	YES

RATED VOLTAGE :	220-240V,50-60Hz, IPH
VOLTAGE RANGE :	198V – 255V
INPUT WATTAGE :	117W
DEFROST WATTAGE :	271W
FULL LOAD AMPS :	0.5A

Top Mount : Deluxe models: ----------

This refrigerator is managed by an Electronic System, mainly consisting of the components:

- Electronic Control Board (Nilgiri- Dlx (BEE))
- POT (Potentiometer) in case of Dlx (BEE) models only.
- Temperature Sensors {refrigerator, Defrost & POT(Dlx)}
- Compressor (With Run capacitor)
- Freezer Fan Motor (AC)
- Defrost Heater (Integrated Al tube 245W)
- Door Open Sensing

These components are described as shown below.

– Electronic Control

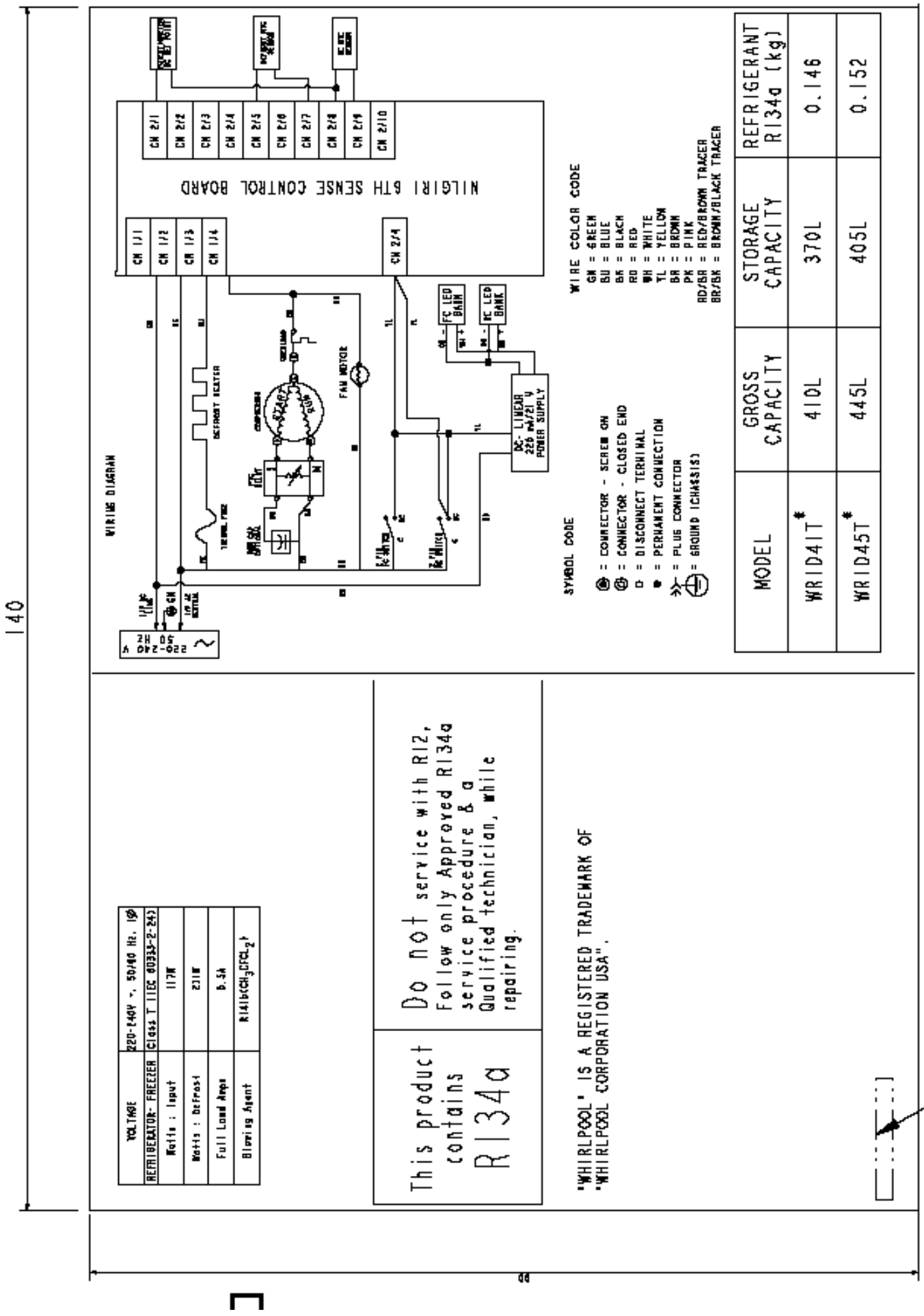
The complete operation of this product is done by the Electronic Control, Functions of this models are fully controlled by the Micro-controller IC which executes the functions according to the needs, turning the components On or Off through received/managed signals, such as:

- Compressor On/Off
- Defrost Heater On/Off
- Temp setting in refrigerator Compartment, through received signals by the POT along with the RC & FC Sensors Temp. Feedback.
- Door open sensing / Alarm
- Among many other functions controlled by its software.

The Electronic Control is located at the rear of the refrigerator, next to the cabinet and besides the Compressor, inside a plastic box. Cables going inside the product, using connectors that do not permit an assembling failure do its connection to the mains and its components.

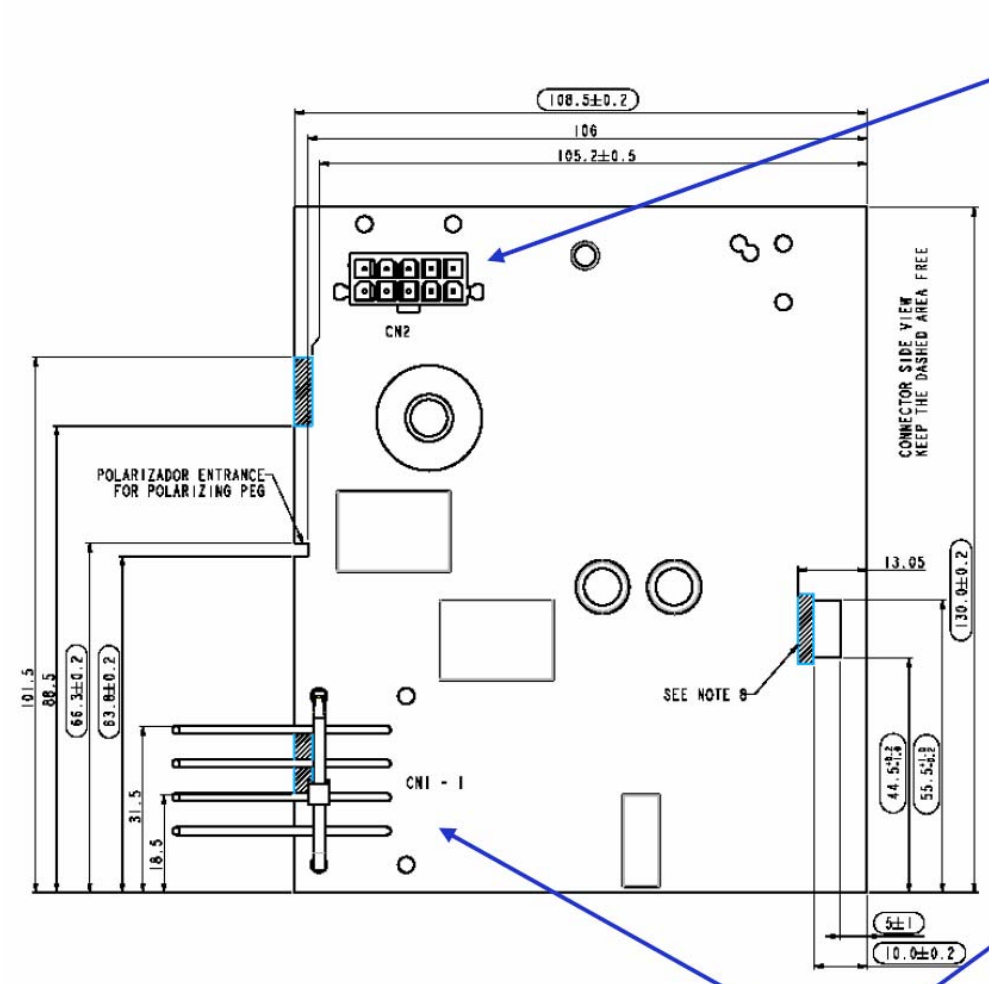
Note: For more details see Wiring Diagram.

Wiring Diagram : Top Mount – No Frost Dlx



Identification of connectors on the Kirchoff board

Identification text (CN2) for connector 2 as mentioned on the board



Identification text (CN1) for connector 1 as mentioned on the board

Refrigerant Charging Qty:

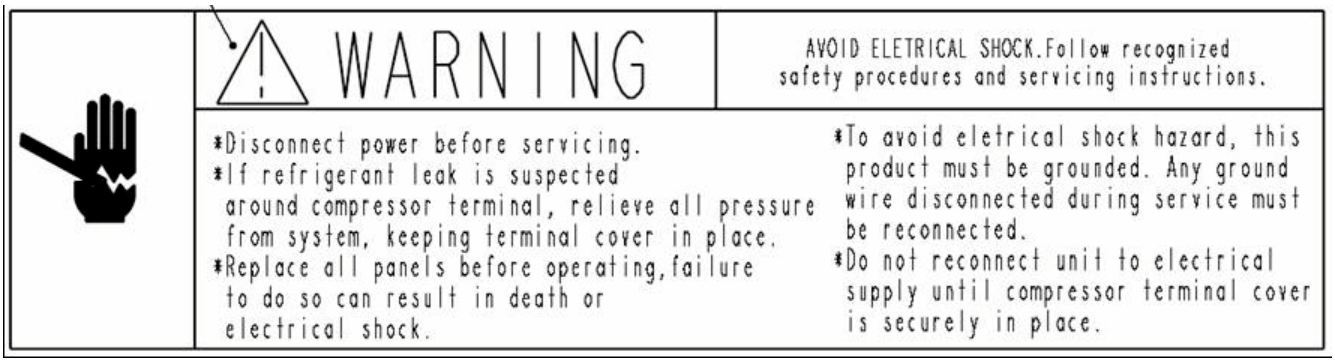
Model	Refrigerant R134a(gms)
410L Dlx	146
445L Dlx	152

CN1 (Connector 1) – Compressor, Heater and Power Cord
CN2 (Connector 2) – RC/FC LED, Load component and Temperature Sensors/POT
CN3 (Connector 3) – User Interface board (Used only for Elite models)

WARNING

Electrostatic Discharge Risk

Do not touch the Circuit components, because you can damage fuse/burned or weaken the board.
Always handle the Boards by the sides/plastic holder.
Spare parts/stock boards if outside the BOX must be kept in anti-static packaging.


WARNING
AVOID ELETRICAL SHOCK. Follow recognized safety procedures and servicing instructions.
*Disconnect power before servicing.
*If refrigerant leak is suspected around compressor terminal, relieve all pressure from system, keeping terminal cover in place.
*Replace all panels before operating, failure to do so can result in death or electrical shock.
*To avoid eletrical shock hazard, this product must be grounded. Any ground wire disconnected during service must be reconnected.
*Do not reconnect unit to electrical supply until compressor terminal cover is securely in place.

Assembly &Disassembly Procedure

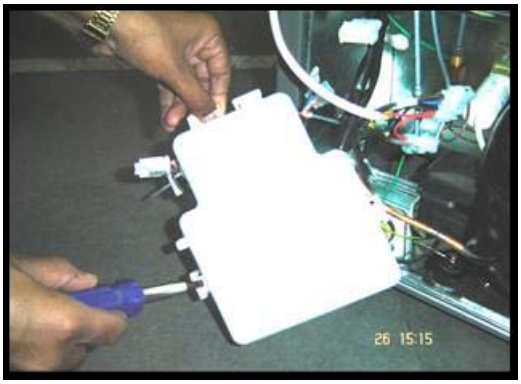
Disassembly Procedure:

A) Core Board Box

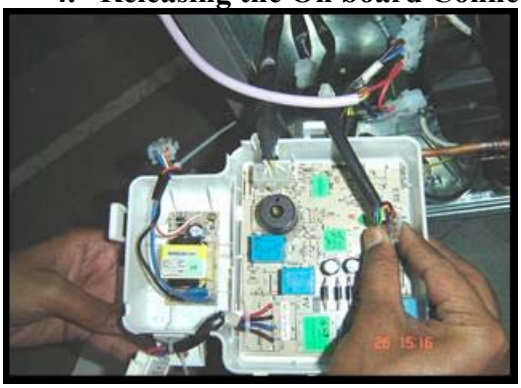
1. **Disconnect the Power cord from the Mains supply.**

2. **Remove the Mounting Screws.**

3. **Release the Cover tabs.**



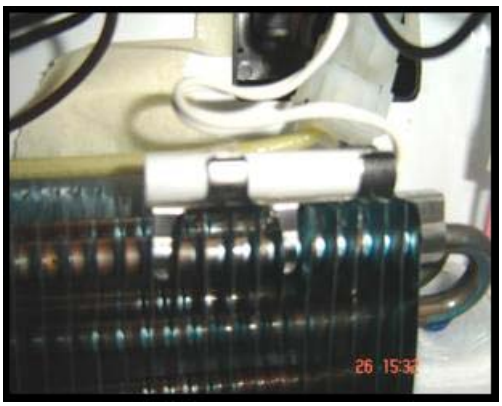
4. **Releasing the On board Connectors.**



IMPORTANT

Be careful when using the Multimeter measuring probes, as they may damage the Connector terminals.
Be careful when removing the electronic board connectors, as they are latched. Remove them at right angles with no side movements

1. **Defrost Sensor mounted on the Evaporator tube.**



2. **Removing/Replacing the Defrost Sensor**

Defrost Temperature Sensor – NTC

It's located at the freezer compartment, along with the Evaporator. The Defrost Sensor is responsible for sending signals to the electronic control, which will command the ending of the defrost, turning off the Defrost Heater,

This does a similar function to the well-known Defrost Bimetal

IMPORTANT

N**ever** change the position of such Sensors, as their functional characteristics can be modified. This sensor also informs the temperature conditions of the Evaporator when the product is activated (plugged in electricity) indicating to the Electronic Control the correct start up to be followed, for instance, manufacturing ,default or the previous programming done by the user, compressor delay , etc.

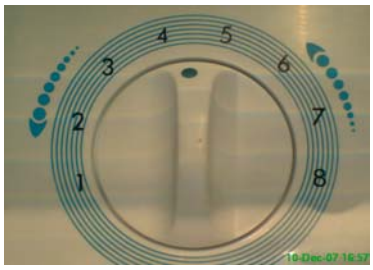
WARNING

These Sensors (refrigerator & Defrost) **Are Compatible with Each Other**, but **Are not compatible** with the Sensors of the previous Model (SYMPHONY)

NEVER replace these Sensors with the Sensor Kit used in the Symphony model.

In the need of replacing one of the Temperature Sensors, Replace the full RC/FC Sensor **harness (In these model FC Sensor harness is replaceable)**. Directly replace the relevant RC or FC Sensor harness. Do not try to repair the harness for the faulty Thermistor.

Dlx models:-



Temperature Control

To control the temperature of your refrigerator, turn the knob according to your requirement. This control is provided inside the refrigerator section. Turn knob to the left to reduce the cooling and to the right to increase the cooling. It is preset to the middle position.

Position	Usage Condition
1 - 2	During Winters or when there is not much food stored in the refrigerator
3 - 4	This is the default setting. Can be used under normal usage conditions
5 - 6	During Summer or when there is a lot of food stored in the refrigerator
7_ 8	During extreme summer or when you want very strong cooling

Adaptive Defrost Control

The defrost cycle shall be started after the Defrost timer has expired. According to the following defrost procedure: Defrost must be executed every time one of the following event occurs:

1. After 8 hours (+/-10 minutes) of compressor running, calculated considering just the thermostat function.
2. When the compressor stops (in thermostatic mode) and a time period of 20 min (+/-1 minute) is allowed to complete the time to defrost.
3. If the door open time > 10 min, within first 5 hrs of cumulative compressor run time, defrost is initiated at 5hrs.
4. If door open time > 10 min between 5 to 8 hours of cumulative compressor run time, defrost will happen instantaneously.
5. If the door open time < 10 min or If there is at least one door opening up to 8 hrs of compressor running then defrost time is as per point 1.
6. If there is no door opening up to 8 hrs of compressor running than defrost time will be 18hrs
7. If there is no door opening for 8 hrs, & there is door opening between 8 to 18 hrs of compressor running, defrost will take place immediately.

The 5th, 8th or 18th hr of compressor running (defrost timer) consist of the sum of all the compressor's ON time, independently of the number of compressor cycles and how many time the compressor was ON.

Door Open Sensing Alarm

Door open sensing alarm activates or gives beep if the door is kept open for more than 2 min.
During the Door opening beep alarm if the door is closed then the alarm gets deactivated.

Alarm Codes, Priority, Retention and Trigger

Alarm code for Deluxe models: -

- In event of any Fault accurring for RC/FC or Pot sensors then immediately after 2 min's of the fault occurrence a Buzzer Beep for 1 Sec will be activated indicating the Sensor fault condition in Dlx models only.
- To understand where there is any Sensor or Pot failure indication in the Dlx model, Service Person should Switch On the Product & wait for the any buzzer Beep if any after 5 sec of Product switch ON. This will indicate the Error status in the Dlx models.

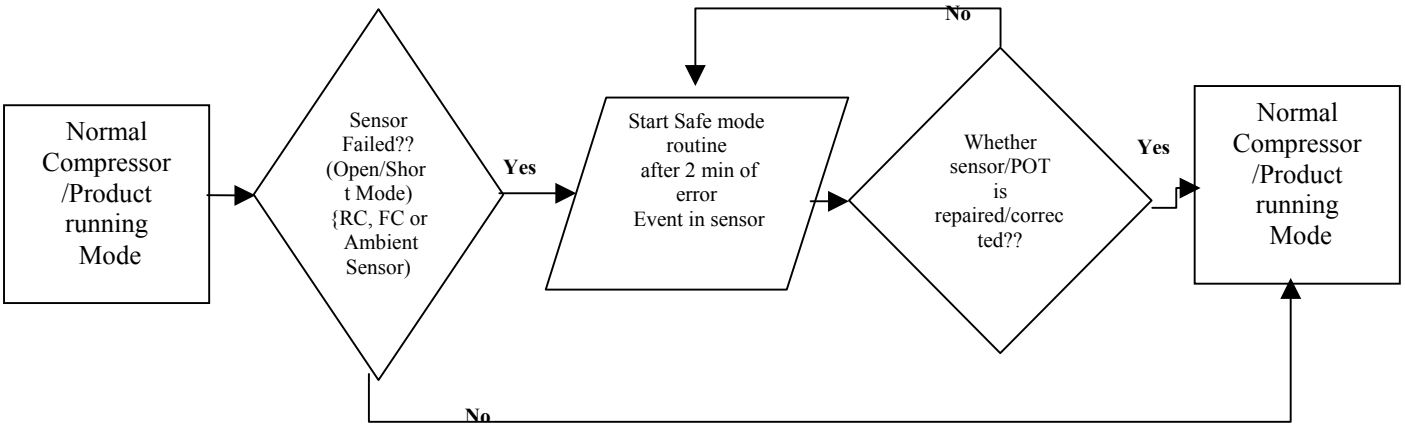
Check Point:

- Poor contact between terminals/ connectors – CN2 (Temperature Sensors) at Electronic Control (main board)
- The Sensor/Pot itself that might be open or in short circuit and has to be replaced (see Sensor/Pot replacement).

Safe mode routine

During Constant fault condition, the Electronic Control will assume a safety routine, as in normal cycle, trying to keep food conservation, however will work as follows:

• Compressor and Fan Motors will be on for 25 minutes and then will turn off for 20 minutes.
• Interval set between defrosts will be fixed in every 5 hours of the Compressor activity
• Every defrost time is fixed for 20 minutes. No dependency on defrost sensor for Cut Off temp of 15°C


Normal Compressor /Product running Mode
Sensor Failed?? (Open/Shor t Mode) {RC, FC or Ambient Sensor)
Yes
Start Safe mode routine after 2 min of error Event in sensor
No
Whether sensor/POT is repaired/correc ted??
Yes
Normal Compressor /Product running Mode
No

Note: -

- There is no Service routine provided in this model.
- In Dlx models Diagnosis of the Error / Sensor / Pot failure is not of continuous nature. Service person needs to restart the Product to listen to the Buzzer Beep for error indications if any.
- To check whether Heater is working fine or not, service person can use the Power up initialization function of the model, where Product need to be switched Off & need to be ensured that the temp at the FC sensor is >0°c, then after making the product ON product goes into the Power up initialization mode where after product switch ON, heater gets activated for the first 5 seconds & then it goes to the compressor mode. Service person can make the use of this 5 seconds where by putting the Tong tester one can easily identify the healthy/faulty condition of the heater through the driving current displayed on the tong tester it self at the Electronic core board box location without opening the FC Plenum.
- In case of any Aluminum foil wrapping found over the Wiring harness either in FC compartment, RC Compartment or in the Compressor deck area, the same Al foil should be carefully replaces in same fashion after servicing
- In case of any detailed technical information please check with the Dlx technical specification.

Board Level Diagnostics for :

* Thermistor Failure FC/RC
* Potentiometer Failure

1 First Turn Off the Product & disconnect the Plug.

2 Remove the Control Board from Box.

3 Disconnect the 10-Pin connector from Board.

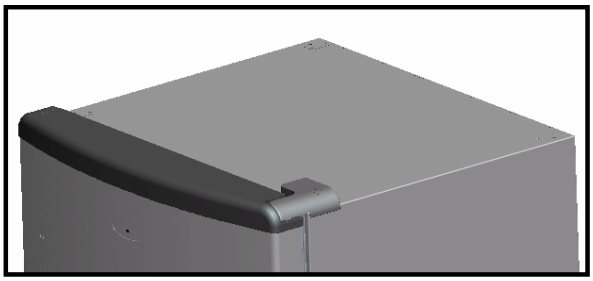
4 For Thermistor Failure FC/RC

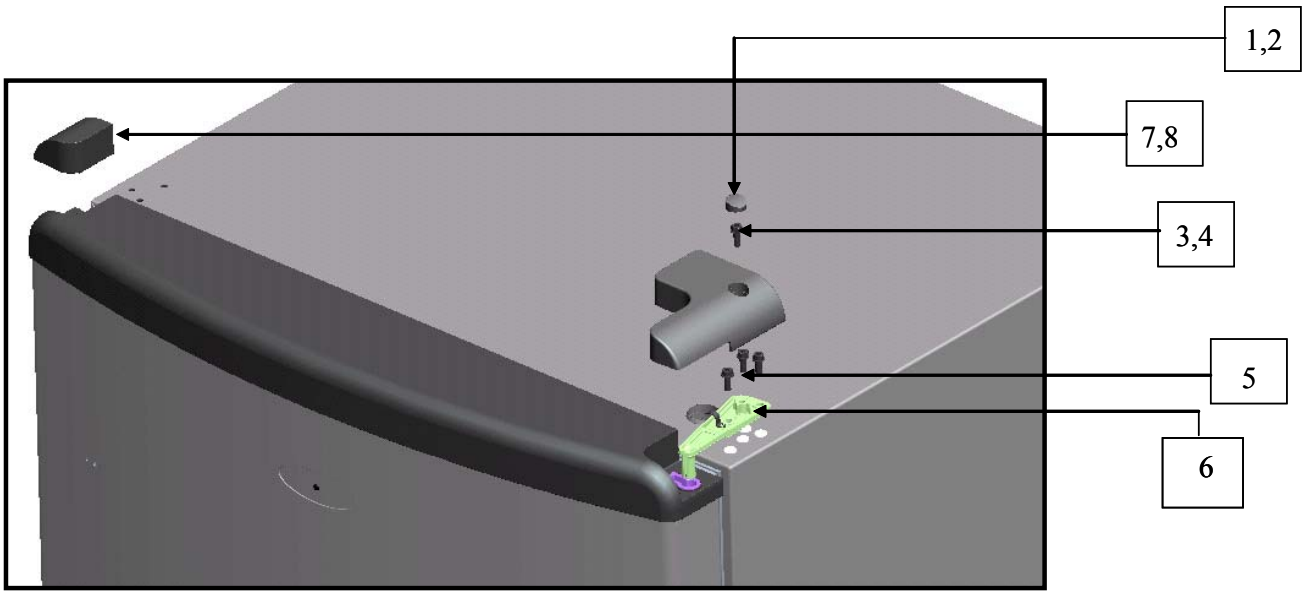
* Check resistance on pin no. 8 & 9 of CN2 (10 pin connec) for RC Thermistor.
* Check resistance on pin no. 5 & 7 of CN2 (10 pin connec) for FC Thermistor.
* IF thermistor is open then the resistance is zero.
* IF thermistor is short then the resistance is above 22 KOhms
* IF resistance lie between 0-22 KOhms the themistor is OK.

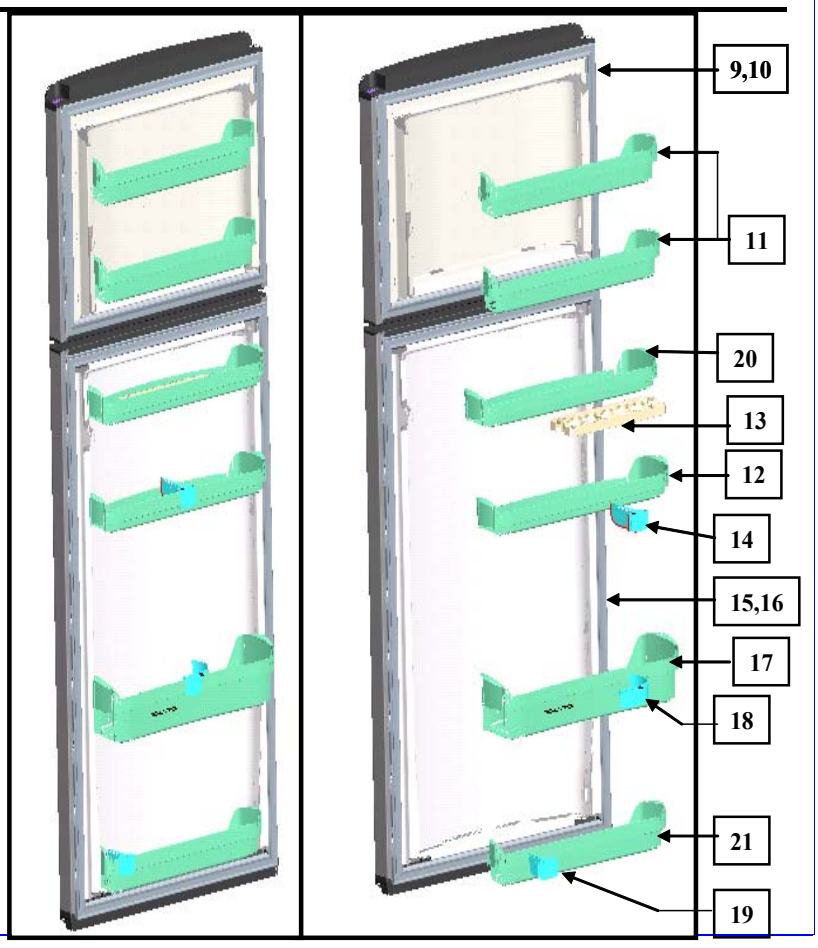
5 Potentiometer Failure

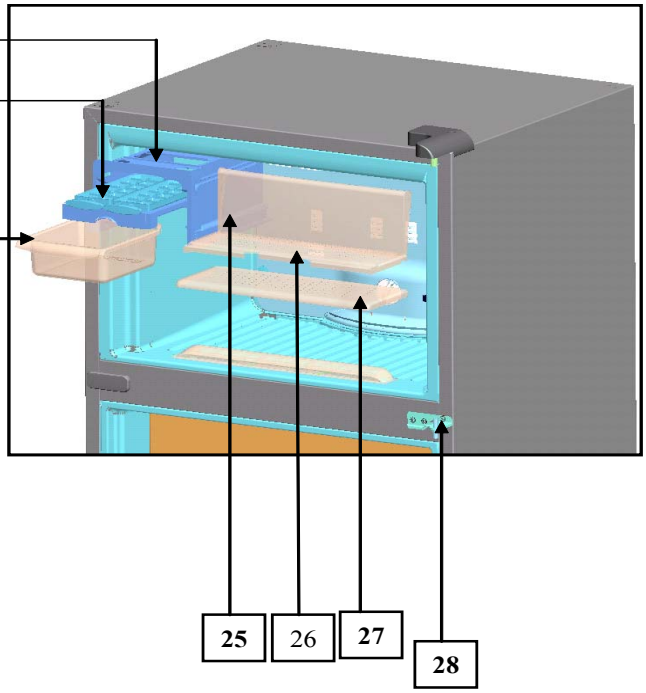
* Check resistance on pin no. 1 & 8 of CN2 (10 pin connec) for Potentiometer.
* It should lie between 0 to 22 K ohms

EXPLODED VIEWS





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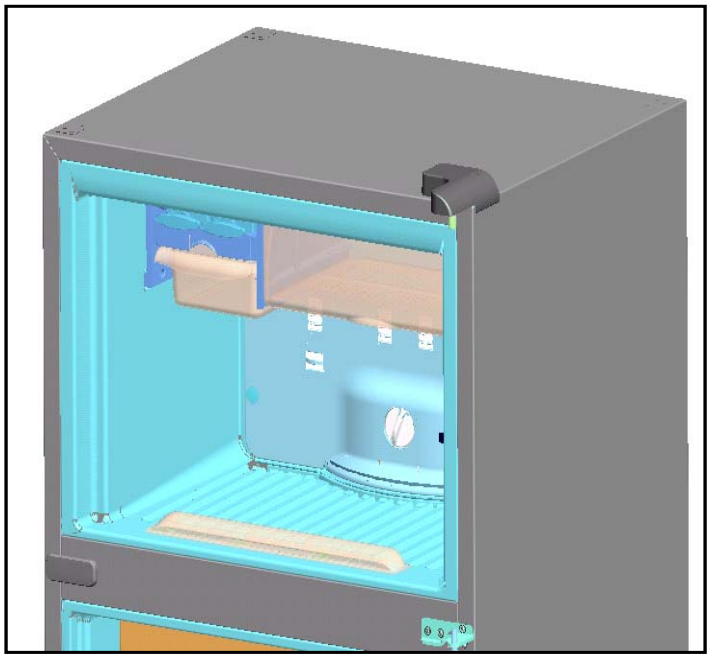

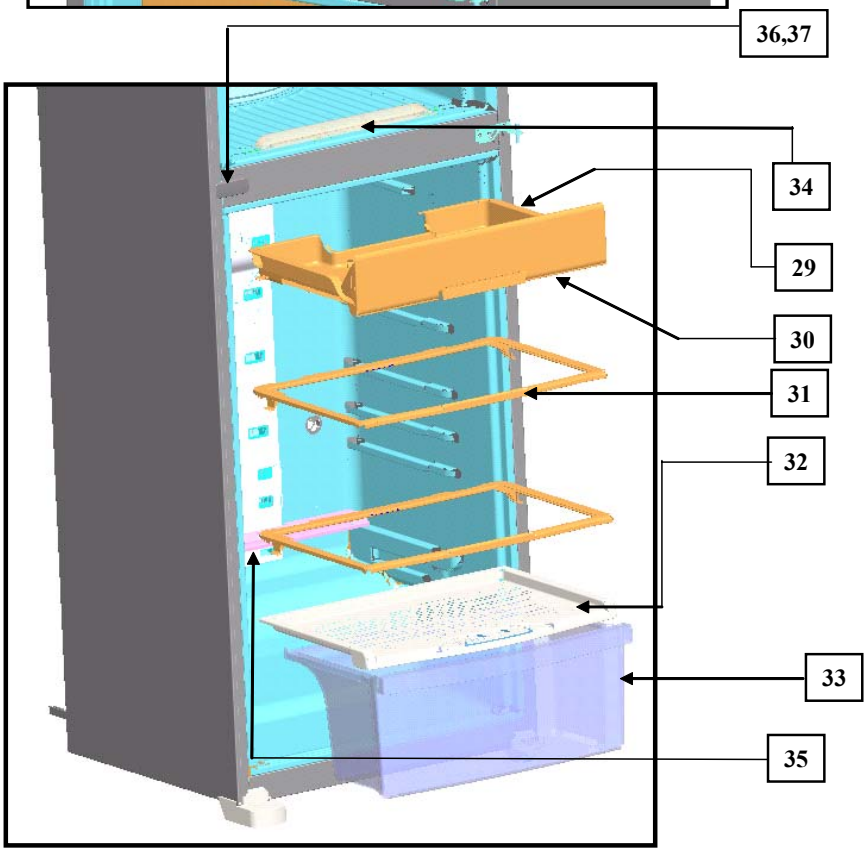
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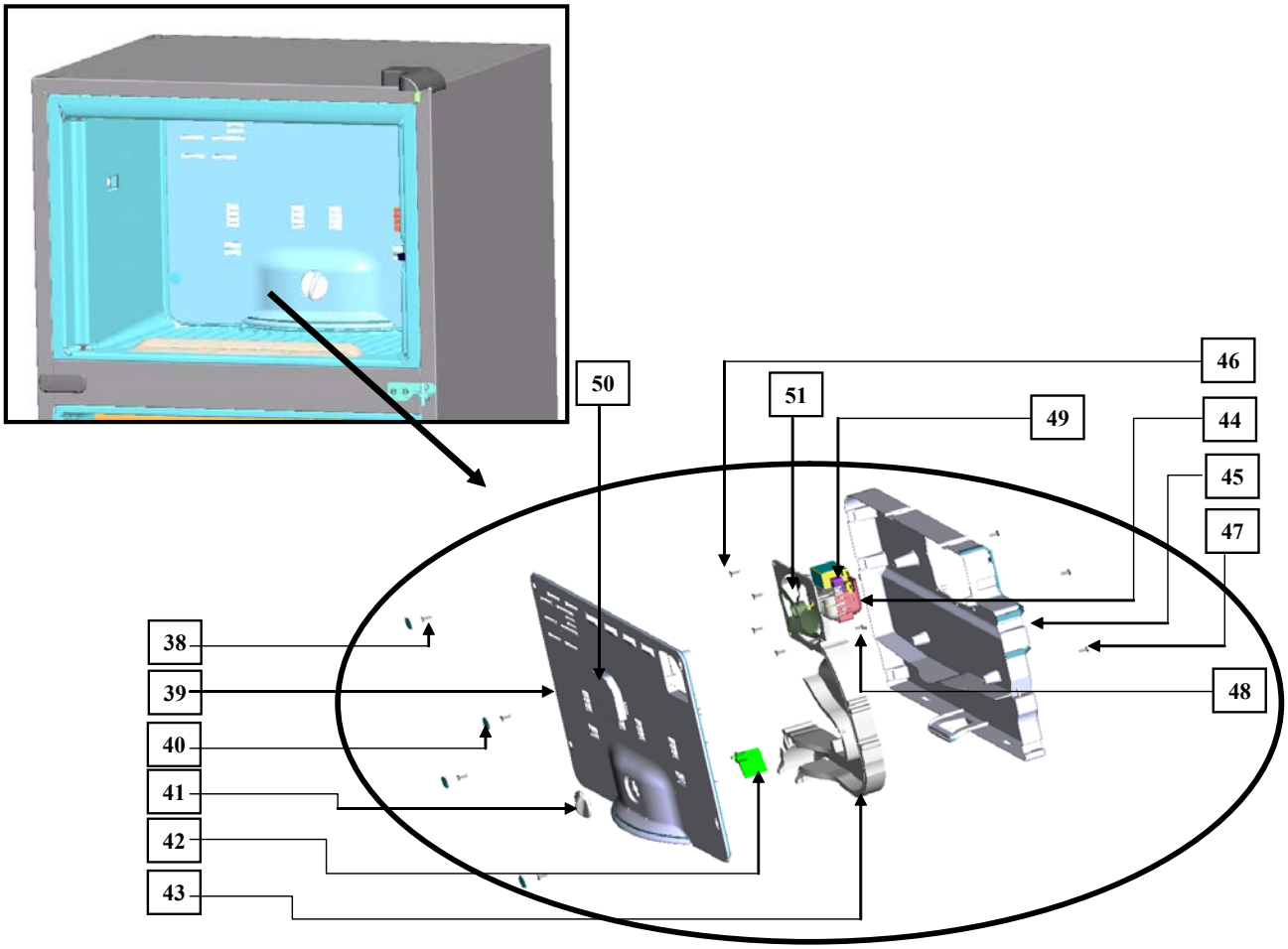
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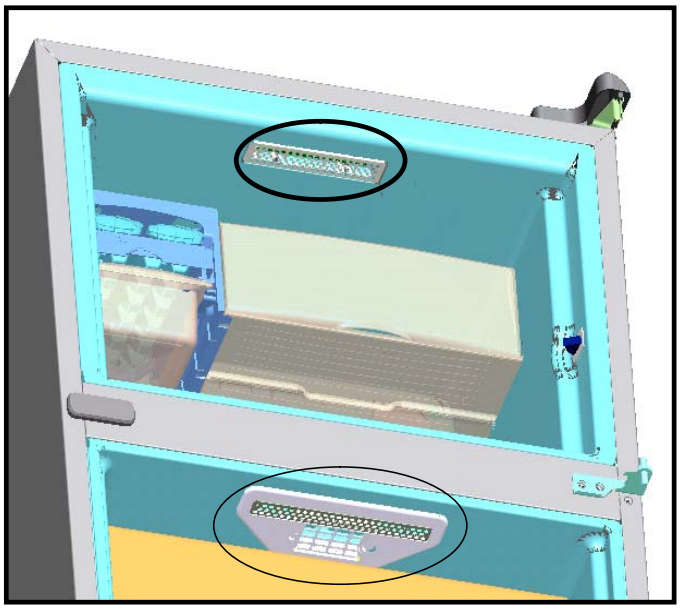

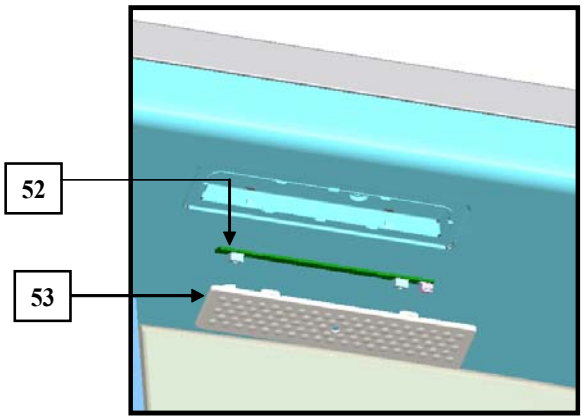
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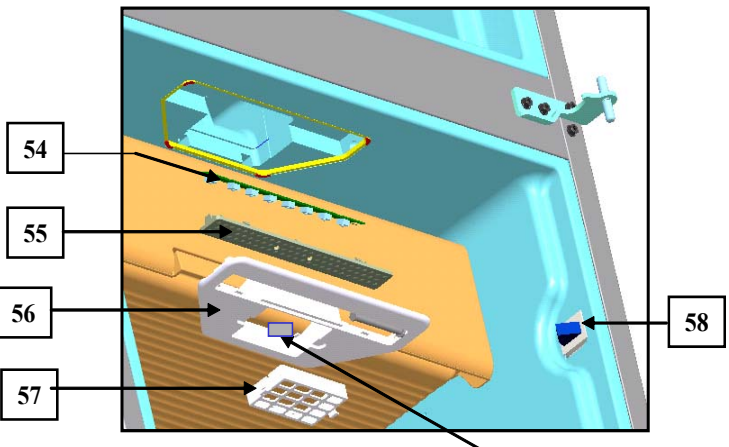
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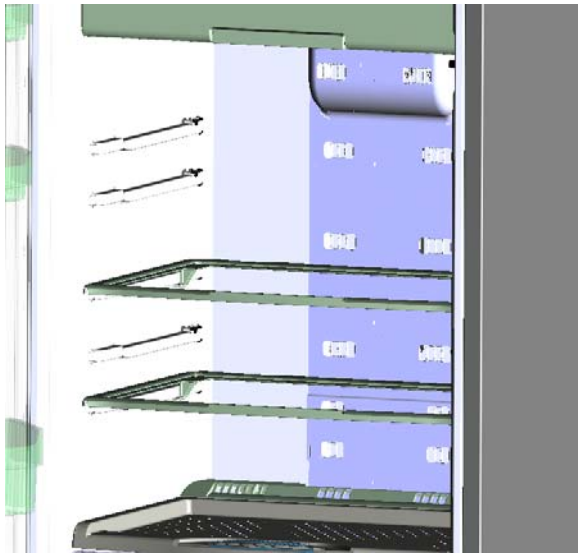

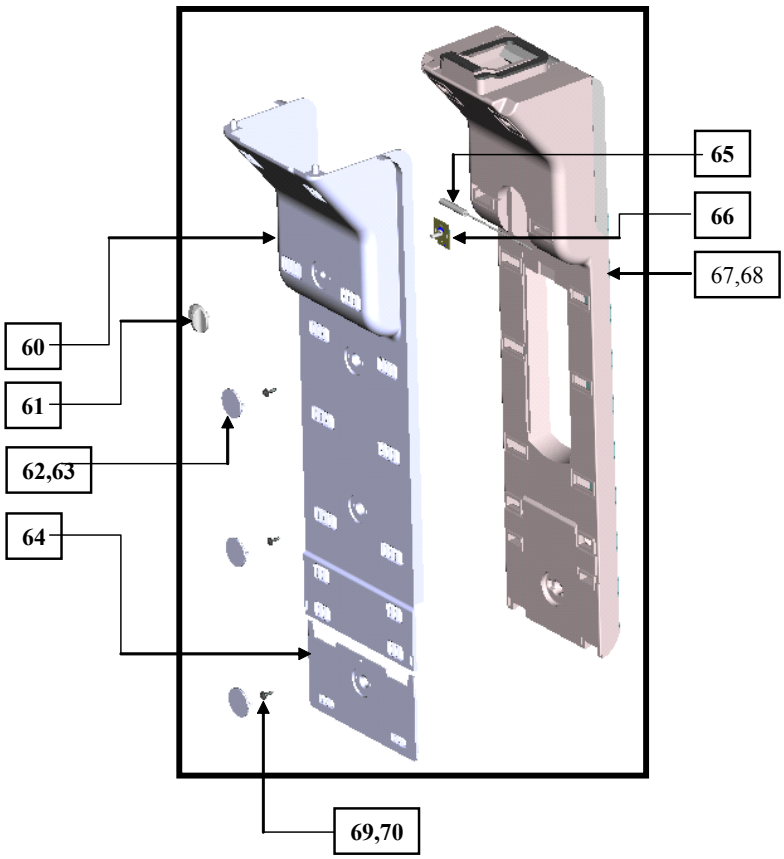
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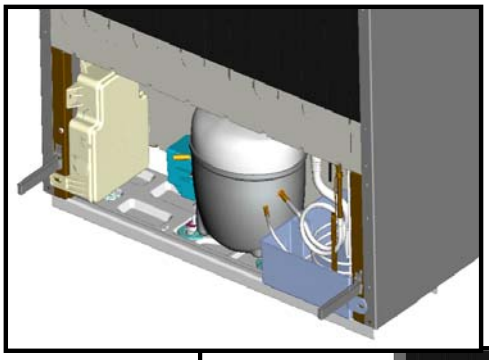

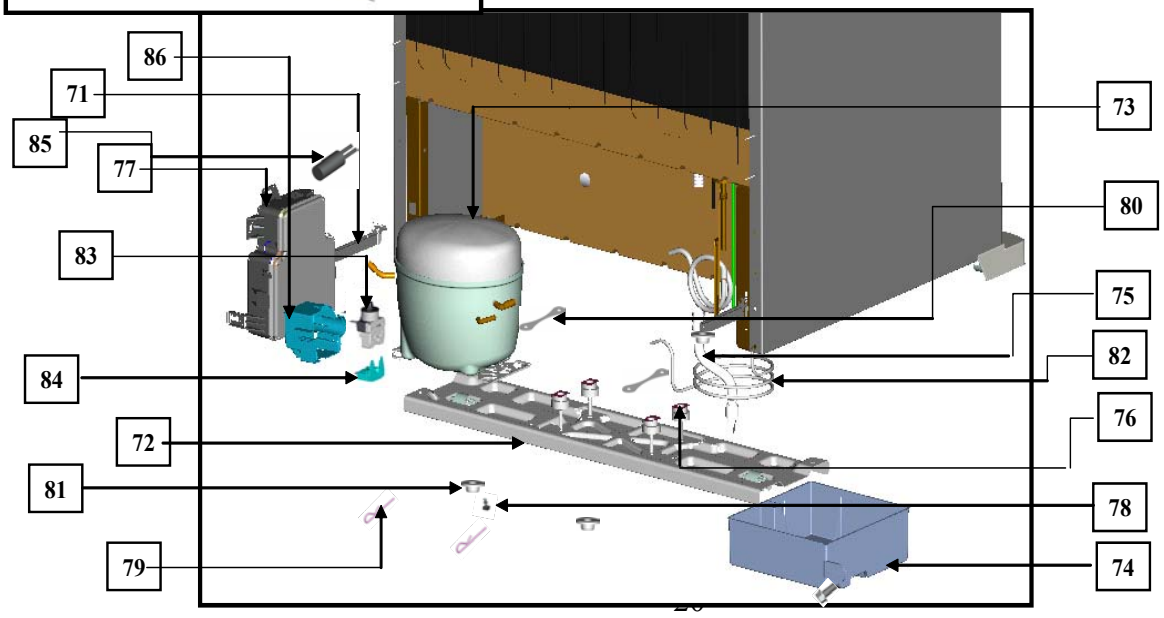
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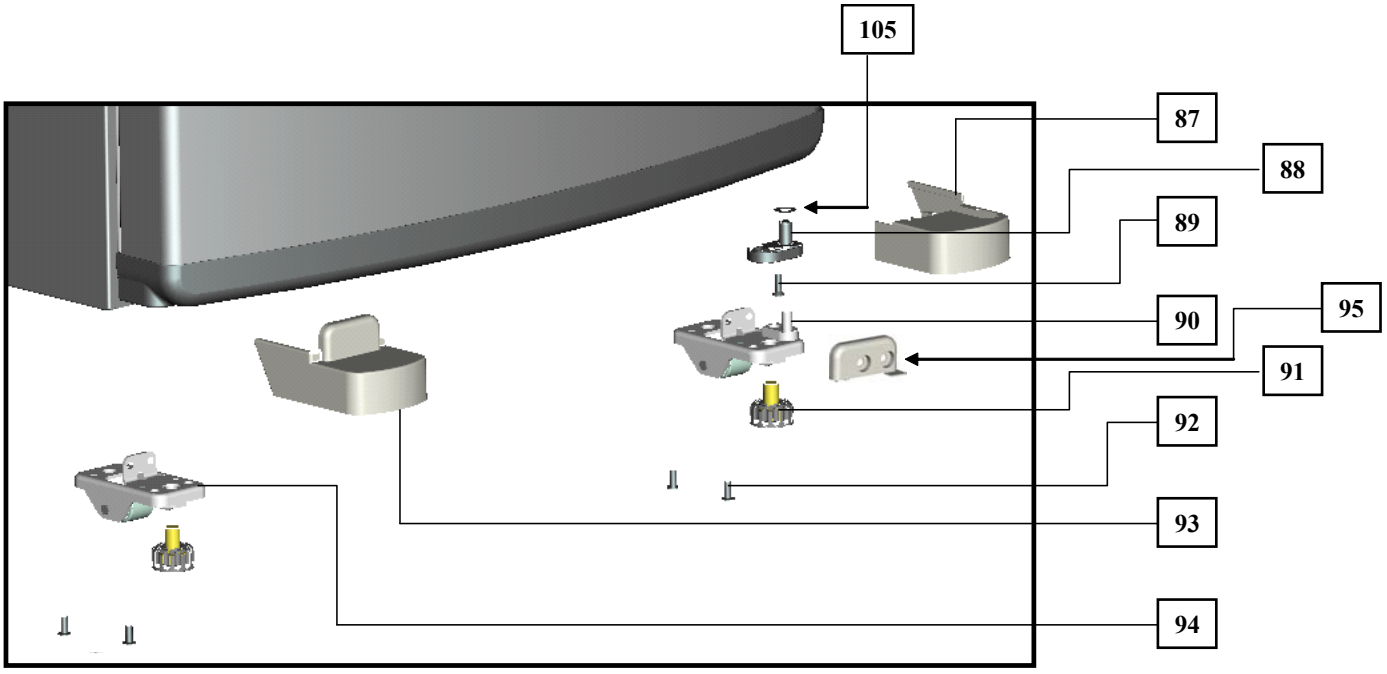
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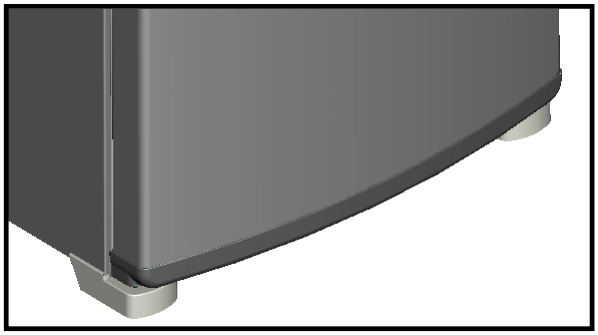

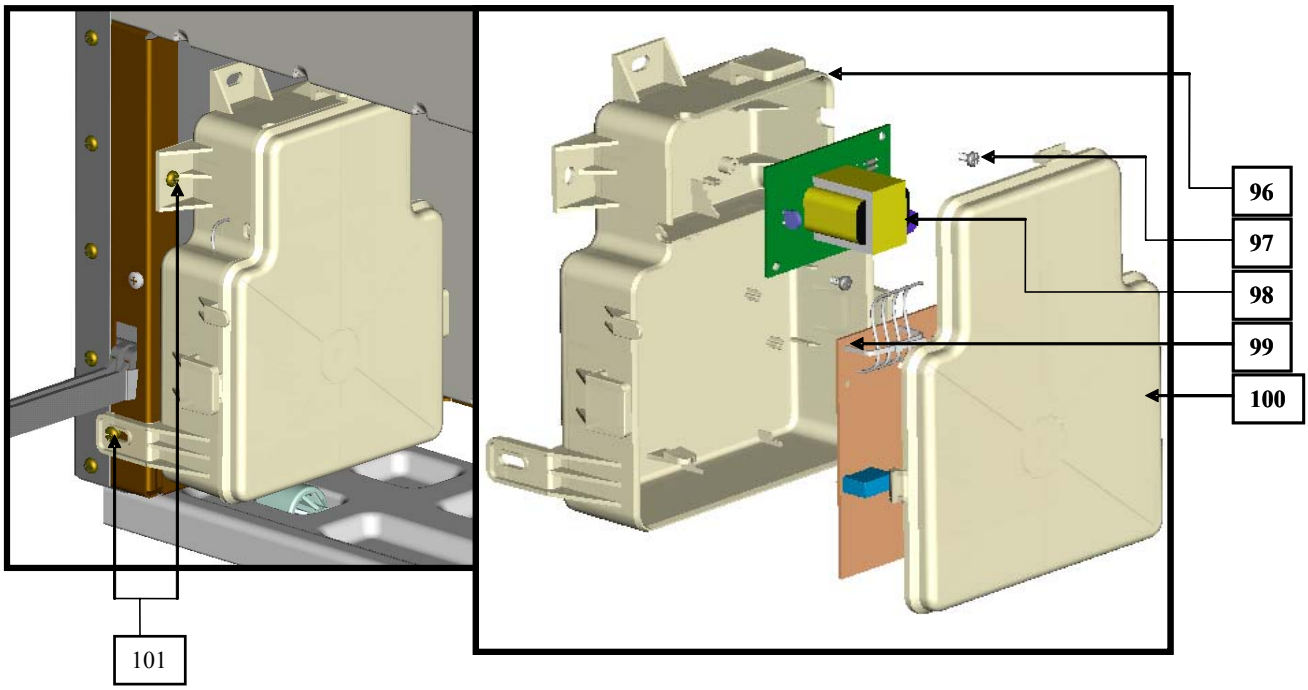
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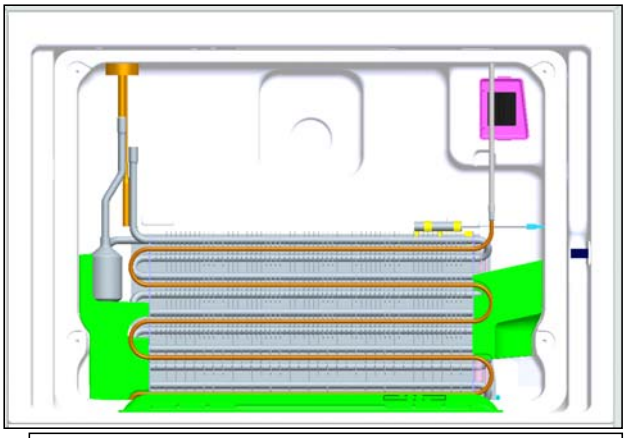

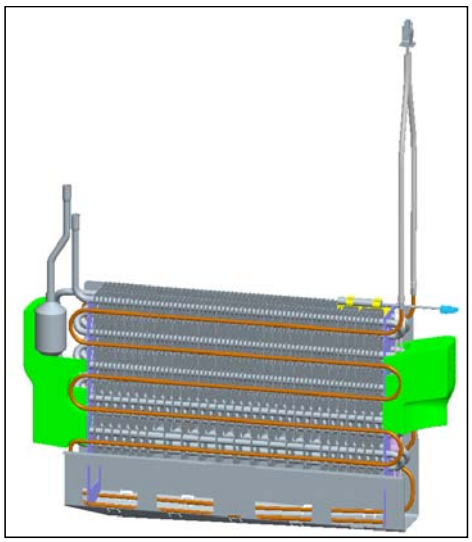

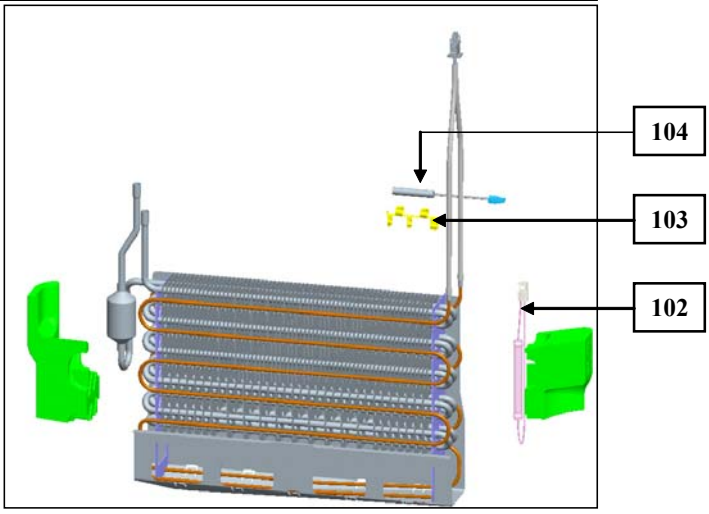
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PART LIST FOR ONYX-AUSTRALIA

SL.NO	PART NO.	DESCRIPTION
1	A2242782000	CAP, TOP HINGE COVER WHITE- ONYX 1
2	A2242785500	CAP, TOP HINGE COVER METALON- ONYX 1
3	A2240872000	TOP HINGE COVER RH-ONYX,WHITE 1
4	A2240875500	TOP HINGE COVER RH-ONYX,METALON 1
5	A2243510000	SELF TAP SCREW M 5.5 x 1.8 4
6	A2242600000	SUB ASSY,TOP HINGE-ONYX 1
7	A2242332000	COMPIMENT END CAP, FC TOP,LH-ONYX ,WHITE 1
8	A2242335500	COMPIMENT END CAP, FC TOP,LH-ONYX , METALON 1
9	A2242155500	DOOR FC ASSY,LH,450 & 410 AUS,METALON -ONYX,DLX 1
10	A2242152000	DOOR FC ASSY,LH,450 & 410, AUS,WHITE -ONYX,DLX 1
11	A2240350000	FREEZER BIN - ONYX 2
12	A2243700000	MUTLIUSE BIN -ONYX 1
13	A2240510000	EGG TRAY - ONYX 1
14	A224059D800	PACKET SEPERATOR - ONYX 1
15	A2242122000	DOOR RC ASSY,LH,450L,AUS,WHITE -ONYX,DLX 1
15	A2242262000	DOOR RC ASSY,RH,410L,AUS,WHITE -ONYX,DLX
16	A2242125500	DOOR RC ASSY,LH,450L,AUS,METALON -ONYX,DLX 1
16	A2242265500	DOOR RC ASSY,RH,410L,AUS,METALON -ONYX,DLX
17	A224065D800	BOTTLE SEPERATOR - ONYX 1
18	A2240370000	BOTTLE BIN - ONYX 1
19	A224357D800	BIN SEPERATOR - ONYX 1
20	A224036000A	SHALLOW BIN - ONYX 1
21	A2243690000	FREEZER BIN - RC ONYX 1
22	A208168000D	ICE TWISTER BRACKET 1
23	A2084290000	ICE TWISTER SUB ASSY 1
24	A208171000A	ICE COLLECTOR 1
25	A2240800000	QUICK FREEZE COVER - ONYX 1
26	A2240810000	QUICK FREEZE SHELF, FRONT -ONYX 1
27	A2240820000	QUICK FREEZE SHELF, BACK -ONYX 1
28	A2242620000	SUB ASSY,CENTRE HINGE LH-ONYX 1
29	A2240390000	CHILLER - ONYX 1
30	A2240400000	CHILLER COVER - ONYX 1
31	A224041000B	GLASS SHELF 2

32	A2240700000	SUB ASSY,CRISPER COVER - ONYX 1
33	A224044000A	VEG CRISPER 1
34	A224133000A	FC GRILL - ONYX 1
35	A2242230000	COMPLEMENT,VEG CRISPER COVER- ONYX 1
36	A2241102000	COVER,CENTRE RAIL NON HINGE WHITE - ONYX 1
37	A2241105500	COVER,CENTRE RAIL NON HINGE METALON - ONYX 1
38	A2243490000	M 4.8X 13 SELF TAPPING SCREW(LINER TO PLENUM) 4
39	A2242690000	SUB ASSY PLENUM FRONT -ONYX 1
40	A2241810000	PLENUM CAP-ONYX 4
41	A201495000C	KNOB - FREEZER CONTROL 1
42	A2244120000	FC DAMPER , AUS-ONYX 1
43	A2240730000	COMPLEMENT EPS, PLENUM BACK- ONYX 1
44	A2221170000	FAN MOTOR MI-(DUO) 1
45	A224268000A	SUB ASSY PLENUM BACK -ONYX 1
46	A201356000B	SCREW FOR FIXING BRACKET AND HOUSING 4
47	A2243500000	M 4.2X 16 SELF TAPPING SCREW(FRONT TO BACK) 4
48	A2223740000	SCREW FOR FIXING FAN MOTOR 1
49	A2222710000	SOUND DAMPER 1
50	A2242540000	COMPLEMENT PLENUM FRONT-ONYX 1
51	A2221180000	FAN BLADE 110MM, DUO 1
52	A2241650000	LED PCB, FC-ONYX 1
53	A224153000A	LENS, FC LED-ONYX 1
54	A2241010000	RC LED PCB-ONYX 1
55	A2241080000	LENS, RC LED-ONYX 1
56	A224102000A	HOUSING RC LED, DEODERISER-ONYX 1
57	A2242770000	COVER - DEODERISER-ONYX 1
58	A2253030000	SWITCH ROCKER ARM, NC- ESBEE W welded 2
59	A2087000000	DEODERISOR 1
60	A224062000C	COVER AIR DIFFUSER - ONYX 1
61	A201135000E	THERMOSTAT KNOB 1
62	A224042000A	CAP, COVER AIR DIFFUSER SCREW-ONYX,445L 3
63	A224042000A	CAP, COVER AIR DIFFUSER SCREW-ONYX,410L 2
64	A224097000A	EXTENSION COVER AIR DIFFUSER-ONYX 1
65	A224052000A	HARNESS RC, DLX-ONYX 1
66	A222248000F	POT PCB ASSEMBLY 1
67	A224163000A	DIFFUSER EPS SUB ASSY,450L - ONYX 1

68	A224328000A	DIFFUSER EPS SUB ASSY,410L - ONYX 1
69	A2250430000	SCREW FOR FIXING COVER AIR DIFFUSER ASSY TO LINER , 450L 3
70	A2250430000	SCREW FOR FIXING COVER AIR DIFFUSER ASSY TO LINER , 410L 2
71	A224167000A	CABINET SPACER-ONYX 2
72	A224142000B	COMPRESSOR BASE PLATE ASSY-ONYX 1
73	A2260560000	COMPRESSOR EGZS 80HLC (513701040) - ONYX 1
74	A2243930000	SUB ASSY DEFROST WATER TRAY-ONYX 1
75	A224324000A	EXTENSION DRAIN TUBE - ONYX 1
76	A211597000A	GROMMET - COMPRESSOR-GNF 4
77	A224288000A	CORE BOARD BOX ASSY -DLX - ONYX 1
78	A201358000A	EARTHING SCREW M4.2 1
79	A2243820000	SPLIT PIN-COMPRESSOR MOUNTING-ONYX 4
80	A2243800000	SHIM COMPRESSOR MOUNTING 2
81	A2116380000	COMPRESSOR SLEEVE-GNF 4
82	A2242970000	DISCHARGE TUBE 1
83	A2253180000	PTC RELAY,EGZS80HLC 1
84	A2253190000	MOTOR PROTECTOR,EGZS80HLC 1
85	A2253200000	RUNNING CAPACITOR,EGZS 80HLC 1
86	A2253210000	PROTECTOR COVER,EGZS 80HLC 1
87	A2241982000	SOCKLE,HINGE SIDE AUS,LH OPEN-ONYX , WHITE 1
87	A2241985500	SOCKLE,HINGE SIDE AUS,LH OPEN-ONYX , METALON
88	A224050000B	STOP, DOOR RH - ONYX 1
89	A2241310000	M4.8 x 1.6 SCREW FOR FIXING RC DOOR STOPPER, 410L/450L 1
90	A2241090000	SUB ASSY,BOTTOM HINGE,HINGE SIDE,LH OPEN -ONYX 1
91	A224127000A	LEVELLER ASSY-ONYX 2
92	A2243510000	M 5.5 X 1.8 SELF TAP SCREW (BOTTOM HINGE AND WRAPPER) 4
93	A224199000A	SOCKLE,NON HINGESIDE AUS,LH OPEN – ONYX,WHITE 1
93	A224199000A	SOCKLE,NON HINGESIDE AUS,LH OPEN – ONYX,WHITE 1
94	A2242710000	SUB ASSY,BOTTOM HINGE,NON HINGE SIDE,LH OPEN-ONYX 1
95	A2242342000	SOCKLE CAP , ONYX,WHITE 1
95	A2242345500	SOCKLE CAP , ONYX,METALON 1
96	A2290690000	CONTROL BOX 1
97	A2290890000	SCREW - DC POWER SUPPLY 2
98	A224209000C	DC POWER SUPPLY-ONYX 1
99	A2244530000	CORE BOARD, DLX-ONYX-AUS 1

10	A2290700000	CORE BOARD BOX COVER 1
101	A2243480000	M4.8 X 0.8 SELF TAPPING SCREW (CONTROL BOARD TO WRAPPER) 2
102	A2117510000	THERMAL FUSE WITH CONNECTOR 1
103	A2290920000	FC THERMISTOR CLIP 1
104	A2242050000	HARNESS, FC THERMISTOR 1
105	A2243610000	SS WASHER DOOR STOPPER 1
NI	A2241780000	Defrost Heater WRID